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		First Named Inventor	Takaaki Hirai
		Art Unit	1771
		Examiner Name	V. S. Chang
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ENCLOSURES (Check all that apply)

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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	RADER, FISHMAN & GRAUER PLLC		
Signature			
Printed name	David T. Nikaido/Lee Cheng		
Date	December 9, 2005	Reg. No.	22,663/40,949



Docket No.: APT-0006
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Takaaki Hirai et al.

Application No.: 09/856,468

Confirmation No.: 6366

Filed: June 7, 2001

Art Unit: 1771

For: **PRE-EXPANDED PARTICLES OF
CRYSTALLINE AROMATIC POLYESTER-
BASED RESIN, AND IN MOLD EXPANDED
PRODUCT AND EXPANDED LAMINATE
USING THE SAME**

Examiner: V. S. Chang

SECOND REPLY BRIEF

MS Appeals-Patent
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This is a Reply Brief under 37 C.F.R. §41.41 in response to the Examiner's Answer mailed on October 11, 2005.

All arguments presented within the Appeal Brief of November 4, 2004 and the Reply Brief of March 11, 2005 are incorporated herein by reference. Additional arguments are provided herein below.

In the Examiner's Answer dated October 11, 2005, the Examiner fails to recognize the unexpected superior results of the present invention. As it is well known under U.S. practice, presence of a property not possessed by the prior art is evidence of nonobviousness. *In re Papesch*, 315 F.2d 381, 137 USPQ 43 (CCPA 1963).

By using the crystalline polyester resin prepuff of the present invention (i.e. *pre-expanded foam particles defined in claim 1, said particles having a bulk density in the range of from 0.01 to 1.0 g/cm³, crystallinity in the range of from 1 to 8% and a crystallization peak temperature in the range of from 130 to 180 °C, and being formed from a moldable crystalline*

aromatic polyester resin which contains at least one moiety of a moiety derived from isophthalic acid or a moiety derived from 1,4-cyclohexanedimethanol in a total amount ranging from 0.5 to 10% by weight of the crystalline aromatic polyester), a superior in-mold foamed/molded body can be produced which has an improved fusion ratio (40% or higher and, more specifically, 62% to 93% in the inventive examples) and is excellent in appearance and heat resistance. Such superior effects obtained by the pre-expanded foamed particles of the present invention are neither expressly nor implicitly taught in JP 08-174590 (hereinafter JP '590) and Park et al. (U.S. Patent 5,475,037).

It is important to emphasize that these superior effects can only be obtained if the pre-expanded foam particles are composed of a crystalline polyester resin containing 0.5 to 10% of cyclohexanedimethanol and/or isophthalic acid and possess a predetermined density, a crystallization peak temperature of 130 to 180°C and a crystallinity of 1 to 8%. In support, a comparison between the inventive examples and the comparative examples of the present specification clearly shows that pre-expanded foam particles having a crystallinity falling outside the claimed range fail to provide an in-mold foamed/molded body having a fusion ratio of 40% or higher.

According to the Declaration dated June 17, 2004 of Mr. Hirai who is the inventor of the present invention and JP'590, it was impossible to achieve a crystallinity of 1 to 8% at the time of the application of JP'590. In the Examples of JP'590, the pre-expanded particles produced from the ordinary thermoplastic resin have a reduced crystallinity only in the range of about 8.6% to about 10.5% which is higher than that required by the present claims. Thus, the fact that JP'950 teaches a crystallinity range outside of the present invention, is evidence that the unexpectedly superior properties of the present invention are not possessed by the prior art.

Furthermore, as stated in Applicant's previously filed arguments, Park et al. only teach that an amorphous polyester (PET) resin, obtained from the copolymerization with 15 to 50% of cyclohexanedimethanol and/or isophthalic acid, can be foamed to a low density of 15 pcf (240 kg/m³) or less (see column 2, lines 25-28, of Park et al.). In other words, Park et al. specifically teaches away from the use of crystalline polyester resin since crystalline polyester resin is very difficult to foam (see column 1, lines 40-46, of Park et al.). Therefore, Park et al. concludes that a crystalline polyester resin is not usable for PET foaming and that PET foaming is only achievable by employing amorphous polyester resin (see column 2, lines 40-43, Park et

al.). Hence, for this reason, these teachings in Park et al. also establish that the unexpectedly superior properties of the present invention are not possessed by the prior art.

It should also be noted that Park et al. teaches that only amorphous PET, obtained from the copolymerization with 15 to 50% of cyclohexanedimethanol and/or isophthalic acid, is expandable and that it is impossible to provide a proper foam by using a PET obtained by the copolymerization with less than 15% of cyclohexanedimethanol and/or isophthalic acid. Thus, Applicant believes that Park et al. clearly does not teach the range of 0.5 to 10% by weight of cyclohexanedimethanol and/or isophthalic acid which leads to the unexpectedly superior properties of the present invention.

Still further, even when assuming that Park et al. implicitly teaches the reduced crystallinity of PET when the amount of co-monomers (cyclohexanedimethanol and/or isophthalic acid) is less than 15% (based on the Examiner's arguments), Park et al. still does not teach or suggest the unexpectedly superior properties of the present invention (for example, an in-mold foamed/molded body having a fusion ratio of 40% or higher) which can only be obtained by controlling the amount (by weight) of cyclohexanedimethanol and/or isophthalic acid within the claimed range of 0.5 to 10%.

In support, in Comparative Example 4 of the present application, a polyester resin which was obtained by copolymerization with cyclohexanedimethanol and isophthalic acid in a total amount of 11.5% was used. Although the total amount (11.5%) of cyclohexanedimethanol and isophthalic acid (co-monomers) is within the range (i.e., less than 15%) implied in Park et al., the resulting pre-expanded particles were poor in dimensional stability and appearance as clearly shown in Table 7 of the present specification. Thus, the results of Comparative Example 4 in the present specification are consistent with the results obtained in Example 4 of Park et al. in which the foam with a density of 27.55 kg/m^3 ($\approx 0.028 \text{ g/cm}^3$) shrank to 84% of its original volume and have poor dimensional stability. Hence, the noted experimental data provides further evidence that the unexpectedly superior properties of the present invention are not possessed by the teachings of Park et al. even when assuming that Park et al. implicitly teaches the reduced crystallinity of PET when the amount of co-monomers (cyclohexanedimethanol and/or isophthalic acid) is less than 15%.

Thus, since Applicant has established, for the reasons noted above, the criticality of the limitations of the claims (i.e. *pre-expanded foam particles having a bulk density in the range of from 0.01 to 1.0 g/cm³, crystallinity in the range of from 1 to 8% and a crystallization peak*

temperature in the range of from 130 to 180 °C, and being formed from a moldable crystalline aromatic polyester resin which contains at least one moiety of a moiety derived from isophthalic acid or a moiety derived from 1,4-cyclohexanedimethanol in a total amount ranging from 0.5 to 10% by weight of the crystalline aromatic polyester) and the presence of superior properties resulting therefrom which not expected from the teachings of JP'590 and Park et al., Applicant submit that the obviousness rejection under 35 U.S.C. §103(a) based on JP'590 and Park et al. can no longer be sustained and should be withdrawn.

CONCLUSION

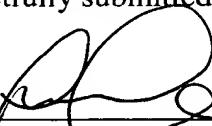
Thus, for at least the reasons set forth hereinabove, the rejection(s) of the claimed invention should not be sustained.

Therefore, a reversal of the Final Rejection of August 4, 2004 is respectfully requested.

If any fee is required or any overpayment made, the Commissioner is hereby authorized to charge the fee or credit the overpayment to Deposit Account # 18-0013.

Dated: December 9, 2005

Respectfully submitted,

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